

### **REMARKS**

Reconsideration and allowance in view of the foregoing amendment and the following remarks are respectfully requested. Claims 1, 5 and 13-14 are amended without prejudice or disclaimer.

#### **Objection to the Specification**

The Office Action objects to the specification for failing to provide proper antecedent basis for the claimed subject matter. Applicants have amended the specification to provide the proper antecedent basis for the claimed subject matter as was suggested in the Office Action. Accordingly, Applicants respectfully request withdrawal of the objection to the specification.

#### **Objection to the Drawings Under CFR 1.83(a)**

The Office Action objects to the drawings under 37 CFR 1.83(a). Applicants have provided corrected drawings so that the drawings comply with 37 CFR 1.83(a). A new Fig. 6 is added and Fig. 5 is amended. Corresponding specification changes are made. The drawings now show every feature of the invention specified in the claims and no new matter is entered.

#### **Rejection of Claims 5-8 and 24 Under 35 U.S.C. §112**

The Office Action rejects claims 5-8 and 24 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants have amended the specification in order to comply with 35 U.S.C. §112, first paragraph and respectfully request withdrawal of this rejection.

#### **Rejection of Claims 13 and 25-28 Under 35 U.S.C. §112**

The Office Action rejects claims 13 and 25-28 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants have amended the specification and respectfully submit that the claims now comply with 35 U.S.C. §112, first paragraph. Applicants note that the use of the term "tangible" is included in the specification

amendments. Applicants understand that in some instances the Patent Office has rejected computer readable medium claims wherein a specification discloses both a tangible computer readable medium such as ROM, a CD-ROM, DVD-ROM, disc drive and the like as well as disclosing an air interface which can be construed as a computer readable medium which contains an electromagnetic signal which may be received by a computing device to control the computing device. Applicants submit that it was certainly inherent and it would be understood by one of skill in the art that claim 13 as well as the disclosure in at least paragraph [0053] of the present specification certainly include ample disclosure of a variety of "tangible" computer readable medium. Accordingly, in view of current Patent Office practices, Applicants respectfully request entry of the reference to "tangible" computer readable medium as certainly inherent in the application as filed and thus does not constitute new matter.

**Rejection of Claims 1, 3-4, 13-14, 16, 21 and 25-28 Under 35 U.S.C. §112**

The Office Action rejects claims 1, 3-4, 13-14, 16, 21 and 25-28 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps. Applicants have amended the claims as was suggested in this rejection to include additional steps. Applicants therefore request withdrawal of this rejection.

**Rejection of Claims 5-8 and 24 Under 35 U.S.C. §112**

The Office Action rejects claims 5-8 and 24 under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential steps. Applicants have amended the claims with the suggestive steps and respectfully submit that these claims now comply with 35 U.S.C. §112, second paragraph.

**Rejection of Claims 1, 3-8, 13-14, 16 and 25-27 Under 35 U.S.C. §103(a)**

The Office Action rejects claims 1, 3-8, 13-14, 16 and 25-27 under 35 U.S.C. §103(a) as being unpatentable over Loghmani et al. (U.S. Patent No. 6,377,927) ("Loghmani") in view of

Gong (U.S. Patent No. 6,418,411) ("Gong") and further in view of Sejnoha (U.S. Patent No. 5,008,941) ("Sejnoha"). Applicants respectfully traverse this rejection and submit that the combination of references fails to teach each limitation of the claims.

While Applicants do not acquiesce that there would be motivation or suggestion to combine these references, Applicants submit that even if combined they fail to teach each limitation of the claims. For example, the Office Action on page 7 asserts that the step of determining parameters of background model at periodic times during a received voice request is taught by Gong in column 2, lines 35-47. Applicants respectfully point out that this limitation does require that there be periodic times during a received voice request that parameters are determined of a background model and a transducer model. Gong fails to teach this limitation and in fact teaches away from such a limitation inasmuch as column 2, lines 35-49 teach "background noise samples are taken during the periods between the key press of the push-to-talk switch and the beeper beeps for receiving an utterance." Using the background noise samples which are taken before the user is able to provide an utterance teaches away from the present invention which requires parameters of the background transducer model to be received at periodic times during the received voice request. This analysis is confirmed later in column 2 starting at line 51 in which Gong summarizes the procedure for recognizing each utterance. The procedure requires waiting for a key press and recording background noise and performing online model combination until all mean vectors are compensated, which occurs before the beeper beeps for receiving an utterance, and then sending a recognition start beep signal in step 3. Accordingly, Applicants submit that Gong simply teach away from this limitation of claim 1.

Inasmuch as Gong fails to teach the limitations of determining parameters of background model at a period time during the received voice request, Gong necessarily fails to teach determining an adaptive speech recognition model for speech recognition based on the

background model and the transducer model. The Office Action on page 7 asserts that column 2, lines 44-50 teach this limitation, but as has been noted above, when it is understood that the parameters of the background model in the present invention are determined at periodic times during the received voice utterance, that such a background model being used to determine an adapted speech recognition model differs from the background model of Gong which is generated by taking background noise samples during a time period which is expressly prior to the user being able to begin an utterance. The beep signals expressly control and indicate to a user when they are allowed to talk and the background noise samples are taken prior to the notification to the user that they can provide an utterance. Accordingly, the step of determining an adaptive speech recognition model in claim 1, which is based on the background model, necessarily involves a different background model than the background model of Gong.

Furthermore, with regards to whether it would be obvious to one of skill in the art to combine Sejnoha with Gong and/or Loghmani et al., Applicants traverse the analysis on page 8 of the Office Action and shall provide herein a detailed explanation of why it would not be obvious to a person of skill in the art to modify the teachings of Loghmani et al. in view of Gong with the teachings of Sejnoha.

To establish a *prima facie* case of obviousness, the Examiner must meet three criteria. First, there must be some motivation or suggestion, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art, to combine the references. Second, there must be a reasonable expectation of success, and finally, the prior art references must teach or suggest all the claim limitations. The Examiner bears the initial burden of providing some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must

present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." MPEP 2142.

If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie* obvious. *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959). MPEP 2143.01.

Furthermore, if the examiner determines there is factual support for rejecting the claimed invention under 35 U.S.C. 103, the examiner must then consider any evidence supporting the patentability of the claimed invention, such as any evidence in the specification or any other evidence submitted by the applicant. The ultimate determination of patentability is based on the entire record, by a preponderance of evidence, with due consideration to the persuasiveness of any arguments and any secondary evidence. *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). The legal standard of "a preponderance of evidence" requires the evidence to be more convincing than the evidence which is offered in opposition to it. With regard to rejections under 35 U.S.C. 103, the examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not. MPEP 2142.

The test for obviousness is what the combined teachings of the references would have suggested to one of ordinary skill in the art, and all teachings in the prior art must be considered to the extent that they are in analogous arts. Where the teachings of two or more prior art references conflict, the examiner must weigh the power of each reference to suggest solutions to one of ordinary skill in the art, considering the degree to which one reference might accurately discredit another. *In re Young*, 927 F.2d 588, 18 USPQ2d 1089 (Fed. Cir. 1991). MPEP 2143.01.

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

With these principles in mind, Applicants submit that Sejnoha expressly teach away from its combination with the teachings of Gong. Notably, Sejnoha relates to a speech recognition system for updating an error compensation signal that relates to the characteristics of the speaker and the transfer function between the speaker and a speech recognition system. Column 1, lines 7-13. In discussing the prior art, Sejnoha teaches that some prior art methods are

“directed toward providing between representations of the noise during non-speech times so that a better recognition of speech can be obtained by subtracting the ‘true’ noise from the speech signal during actual speech. These systems, however, typically do not take into account the effective ‘noise’ which results from movement of the microphone or the relation between the speaker and the microphone, and changes in the speakers voice which can vary in a random fashion.”

In response to the deficiencies identified in the prior art of determining representation of noise during “non-speech times”, Sejnoha provided as an object of his invention to continuously update a data correction signal representative of a speech to a microphone system transfer function which “can be employed during actual speech recognition or training of the system.” Column 2, lines 57-61. Applicants respectfully submit that identifying the deficiencies of taking reading of noise during non-speech times teaches away from combining Sejnoha with Gong inasmuch as column 2, discussed above with respect to the teachings of Gong, certainly establishes that the disclosure of Gong focuses on an requires as a fundamental principle that background noise samples are taken during the time periods between the key press of the push-to-talk switch and the beeper beeps for receiving an utterance. Column 2 expressly focuses on the steps of recording background noise and performing an online model combination prior to the sending of a “recognition start” beep signal that begins the recognition of frame-by-frame of input speech until end of the signal is detected. Inasmuch as Gong’s approach of sampling noise

at expressly non-speech times is highlighted by Sejnoha as problematic and that the primary object of Sejnoha's approach is to continuously update a data correction signal representing the speaker to microphone system which is employed during actual speech recognition, Applicants submit that one of skill in the art would actually be led away from combining these references rather than finding it obvious or having a suggestion or motivation to combine these references. Applicants submit that the suggestive power of these references lead away from their combination, by a preponderance of the evidence, rather than toward their combination.

Applicants also submit that if Sejnoha were to be combined with Gong, that a fundamental principle of operation of one or the both of the references would have to be abandoned or modified such that this necessarily prevents their combination. For example, if the teachings of Sejnoha were incorporated into and used with the teachings of Gong, either Sejnoha would have to abandon the fundamental object of their invention to continuously update a data correction signal during actual speech recognition or Gong would have to necessarily abandon their fundamental approach of only recording background noise for performing an online model combination prior to the ability of the system to receive a user utterance. Accordingly, for this additional reason, Applicants submit that there is ample evidence against the combination of these references.

The Office Action asserts that in order to implement more accurate speech recognition by tracking and compensating for time variant parameters that can degrade recognition performance is an advantage that Sejnoha can provide to the teachings of Loghmani et al. and Gong. However, as has been set forth above, Applicants respectfully believe that the weightier arguments are in Applicants favor in that implementing a "more accurate speech recognition [approach] by tracking and compensating time variant parameters that can degrade recognition performance" as is taught in Sejnoha cannot be implemented into the teachings of Gong without

fundamentally altering or modifying the principle of operation of that reference which, as is required by the MPEP, necessarily leads one of skill in the art away from their combination. Applicants also remind the Examiner that the standard of proof is only by a preponderance of the evidence and Applicants only need to provide slightly more evidence against the obvious to combine then exist in favor of combining two references. Applicants submit that ample and direct teachings away from their combination exist in the references and therefore the preponderance of the evidence is in Applicants favor.

Applicants further submit that Sejnoha also, even if combined, fail to teach each limitation of the claims inasmuch as the present invention requires determining parameters of a background model and a transducer model at a periodic time during a received voice request which feature is not taught by Sejnoha. Updating the parameters of a transformation function as is taught in Sejnoha does not involve the same approach as is recited in the claims. This is easily established by noting that the long term average data signal (LTA) that is generated by a LTA update circuit 25 in Figure 1 is a process that occurs separate from the speech recognition module 24. In other words, when one reads the summary of the invention in column 3 of Sejnoha, it becomes clear that the parameters that are updated are parameters that refer to the systematic transfer function changes that are tracked in terms of the received sound. The process involves computations and updating of parameters until the closest standard representative frames have been eliminated in the input signal. In other words, the basic operation of modifying the system transfer function in Sejnoha occurs between the speaker and the recognition apparatus 24. See column 3, lines 46-50. In other words, Sejnoha does not teach determining parameters of a background model and a transducer model at a periodic time received during the voice request but rather teaches modifying a transfer function before an input audio signal occurs prior to that audio signal is submitted to a speech recognition component for

being recognized. There is simply no mention in Sejnoha of modifying or adapting a speech recognition model based on the parameters that are determined in claim 1. Accordingly, even if Sejnoha was combined with Gong and Loghmani et al., it would only involve preprocessing a received signal prior to speech recognition and would not involve determining an adapted speech recognition model as is required in claim 1.

Accordingly, Applicants respectfully submit that claims 1, 3-5, 13-14, 16 and 25-27 are patentable and in condition for allowance.

**Rejection of Claims 21, 24 and 28 Under 35 U.S.C. §103(a)**

The Office Action rejects claims 21, 24 and 28 under 35 U.S.C. §103(a) as being unpatentable over Loghmani et al. in view of Gong and in view of Sejnoha and further in view of deVries et al. (U.S. Patent No. 6,289,309) ("deVries"). Applicants respectfully traverse this rejection and submit that based on the arguments set forth above that Sejnoha should not be combined with Gong and Loghmani et al. and inasmuch as claims 21, 24 and 28 each depend from an allowable claim, Applicants respectfully submit that these claims are patentable and in condition for allowance.

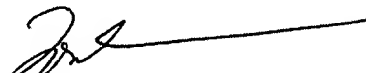
Applicants also do not acquiesce that it would be obvious for one of skill in the art to combine DeVries with any of the other cited references.

**CONCLUSION**

Having addressed all rejections and objections, Applicants respectfully submit that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited. If necessary, the Commissioner for Patents is authorized to charge or credit the **Novak, Druce & Quigg, LLP, Account No. 14-1437** for any deficiency or overpayment.

Respectfully submitted,

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By: \_\_\_\_\_

Correspondence Address:

Thomas A. Restaino  
Reg. No. 33,444  
AT&T Corp.  
Room 2A-207  
One AT&T Way  
Bedminster, NJ 07921

Thomas M. Isaacson

Attorney for Applicants  
Reg. No. 44,166  
Phone: 410-286-9405  
Fax No.: 410-510-1433